

is no question of principle in regard to it, but only of expediency."¹ These are wise words; they might well be inscribed above the chairman's seat in any assembly where botanical nomenclature is discussed.

EAST HARTFORD, CONN.

TWO SUMMERS OF BOTANIZING IN NEWFOUNDLAND.

M. L. FERNALD.

(Continued from p. 129.)

PART III. NOTEWORTHY VASCULAR PLANTS COLLECTED IN NEWFOUNDLAND, 1924 AND 1925.

THERE is no satisfactory list of Newfoundland plants, and the detailed *Flora* which Professor Wiegand and I began in 1910 still needs so many finishing touches that it cannot now be presented. During the past two seasons, however, so many plants have been found which are new to the flora either of Newfoundland or of eastern America that their orderly enumeration at this time is appropriate; and, in order to determine the exact identities of some species, detailed revisions of certain groups have been necessary. In so far as these revisions are completed they are here presented; but certain groups, highly developed in the flora of Newfoundland, still await more critical study and reports upon them must be deferred. These include, among others, the genera *Poa*, *Polygonum* § *Avicularia*, *Cochlearia*, *Euphrasia*, *Campanula* and *Taraxacum*. In some cases, where new northern or southern limits in Newfoundland have been established, it has seemed appropriate to note species already known from remote sections of the island; and in a few cases new species are described or combinations made for extra-limital plants which have come to my attention in studying those of Newfoundland.

WOODSIA ALPINA (Bolton) S. F. Gray. Dry limestone cliffs, western face of Doctor Hill, and calcareous escarpments, western face of Bard Harbor Hill, Highlands of St. John, *Fernald & Long*, nos. 27,203, 27,204. See pp. 124, 125. Earlier collections only from Notre Dame Bay.

¹"Sind wir . . . der Meinung, dass die Nomenclatur stets nur als Mittel zum Zweck der Verständigung in möglichst weiten Kreise, nicht aber als Selbstzweck betrachtet darf, and dass es dabei nur Zweckmassigkeits-, nirgend aber Rechtsfragen gibt."

W. GLABELLA R. Br. Crests of limestone escarpment, western face of Bard Harbor Hill, Highlands of St. John, *Fernald & Long*, no. 27,205. See p. 124. Not previously known from north of Port-à-Port Bay and Notre Dame Bay.

CYSTOPTERIS BULBIFERA (L.) Bernh. Shaded base of wet escarpments of calcareous sandstone, western face of Bard Harbor Hill, Highlands of St. John, *Fernald & Long*, no. 27,206, the first station north of Bay of Islands. See p. 127. At its northernmost station *C. bulbifera* is associated with a peculiarly boreal group of species, including the two preceding and *Poa alpina* L., *Luzula spicata* (L.) DC., *Salix vestita* Pursh, *S. calcicola* Fern. & Wieg., *Draba rupestris* R. Br., *Arabis alpina* L., *Saxifraga cespitosa* L., *S. oppositifolia* L., etc.

C. MONTANA (Lam.) Bernh. Mossy glades in spruce thickets, Savage Cove, *Fernald, Long & Dunbar*, no. 26,153. See p. 75. The only station known in Newfoundland. Found directly across the Straits, at Forteau and Blanc Sablon on the Labrador side.

THELYPTERIS SPINULOSA (O. F. Muell.) Nieuwl., var. **fructuosa** (Gilbert), n. comb. *Nephrodium spinulosum fructuosum* Gilbert, List N. A. Pterid. 37 (1901).

T. spinulosa, var. *fructuosa* stands out rather definitely in the series of variants of *T. spinulosa*. In Newfoundland it is more generally distributed than var. *intermedia* (Muhl.) Nieuwl.

The writer finds the following arrangement of the eastern American varieties of *T. spinulosa* useful and it may be of service to others.

- a. Basal inferior and superior pinnules of the lowermost pinnae subopposite, rarely more than 4 mm. apart; the inferior 1-6 cm. long, if more than twice as long as the superior not exceeding the 2nd inferior pinnule *b*.
- b. Frond glabrous, twice pinnate; the pinnae obliquely ascending, gradually tapering to apex; their pinnules rarely cleft nearly to the middle; the basal inferior one usually longer than the 2nd inferior one: indusia glabrous: scales of the stipe pale-brown or cinnamon-color... *T. spinulosa* (typical).
- b. Frond commonly minutely glandular especially on the rhachis and rhacheolae, tripinnatifid or sometimes tripinnate; the pinnae slightly ascending to divergent; the basal inferior one shorter than to rarely exceeding the 2nd inferior one: indusia glandular: scales of the stipe usually dark-brown at base *c*.
- c. Mature indusia 0.8-1.4 mm. broad: pinnae gradually tapering to apex..... Var. *fructuosa*.
- c. Mature indusia 0.5-0.8 mm. broad: pinnae usually narrowed rather abruptly to prolonged lance-linear tips
Var. *intermedia* (Muhl.) Nieuwl.
- a. Basal inferior and superior pinnules of the lowest pinnae remote, 0.5-2 cm. apart; the inferior 3-10 cm. long, 2-4 times as long as the superior and commonly exceeding the 2nd inferior pinnule *d*.
- d. Frond ovate to ovate-triangular, 1-6.5 dm. long, 1-4 dm. broad, tripinnatifid (the basal pinnae sometimes tri-

pinnate), not glandular; the lower pinnules of the lowermost pinnae with oblong obtuse sharply toothed or cleft segments: rhachises of the spreading-ascending pinnae naked or with scattered linear- to lance-attenuate spreading scales: indusia glabrous

Var. *americana* (Fisch.) Weatherby.

- d. Frond lanceolate, broad at base, gradually tapering from near the middle to the elongate tip, 2–6 dm. long, 1.2–2.5 dm. broad, tripinnate (the basal pinnae sometimes quadripinnate), somewhat glandular beneath; the ultimate divisions (of the 3rd or 4th order) of the lowermost pinnae elliptic-lanceolate to narrowly rhombic, subpetiolulate to petiolulate: rhachises of the spreading-ascending to falcate-recurving pinnae bearing ovate brown scales as well as bristle-like chaff: indusia glandular.....Var. *concordiana* (Davenp.) Weatherby.

The wholly anomalous var. *concordiana*, it may be noted, has been known only from the original individual. It is very similar to and perhaps identical with the equally anomalous and rare English *Lastrea dilatata*, var. *lepidota* Moore.

In one of Schinz & Thellung's papers, in Vierteljahrss. Natur. Gesells. Zürich, lx. 339 (1915), *Dryopteris austriaca* (Jacq.) H. Woynar is published as a new combination based upon *Polypodium austriacum* Jacq. Obs. Bot. i. 45 (1764). It is frankly admitted, however, that the exact identity of *P. austriacum* is in doubt, for "*P. austriacum* Jacq. wird meistens zu *D. spinulosa* gezogen; nach Woynar soll sie speciell zur Unterart *dilatata* (Hoffm.) C. Christensen gehören." Jacquin's description is wholly unconvincing and it is difficult to find specimens of the *Thelypteris spinulosa* group which satisfy his requirement of sericeous-woolly bases: "Petioli omnes sunt pilosi, pinnae & stipes inferior minus; sed hic ad basin languine sericea obducitur." The character, *pilose* fronds ("frondibus supra decompositis, pilosis"), is also difficult to reconcile with either *T. spinulosa* or its var. *dilatata*. To displace the long-used and clearly understood names, *Polypodium spinulosum* Muell. (1777) and *P. dilatatum* Hoffm. (1796), by such an indefinite name as *P. austriacum* Jacq. can lead only to confusion or perpetual doubt.

THELYPTERIS FILIX-MAS (L.) Nieuwl. Frequent and abundant on rich slopes and calcareous talus along the Straits of Belle Isle and generally southward near the West Coast. See p. 110.

POLYSTICHUM LONCHITIS (L.) Roth. Exposed or partly shaded limestone ledges or talus, Burnt Cape, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 27,231; Cape Norman, *Wiegand, Griscom & Hotchkiss*, no. 27, 232; western face of Doctor Hill, Highlands of St. John, *Fernald & Long*, no. 27,235. See p. 102.

Not previously known from north of Bay of Islands and Notre Dame Bay.

ATHYRIUM ALPESTRE (Hoppe) Rylands, var. *AMERICANUM* Butters. Abundant and very handsome on quartzite rocks and gravels along brooks in gulches of Bard Harbor Hill, Highlands of St. John. See p. 117. This and the upper slopes of Tabletop Mts., Gaspé, are the only known regions for this problematic plant east of the Rocky Mts. On luxuriant clumps the fronds become 9 dm. long and 2.5 dm. wide.

ASPLENIUM VIRIDE Hudson. Exposed or partially shaded limestone along the Straits of Belle Isle, from Big Brook to Burnt Cape, the fronds subcoriaceous and tough, often forming dense turf. See p. 99. Limestone cliffs and ledges, western face of Bard Harbor Hill, Highlands of St. John, *Wiegand, Gilbert & Hotchkiss*, no. 27,249, *Fernald & Long*, no. 27,253. Not previously known from north of Bay of Islands.

CRYPTOGRAMMA STELLERI (Gmel.) Prantl. Frequent in crevices of calcareous ledges and cliffs, by streams and on escarpments of the Highlands of St. John; not previously known from north of Cow Head. See p. 118.

POLYPODIUM VIRGINIANUM L. Locally abundant on mossy crests and shaded ledges, Highlands of St. John; not previously known from north of Cow Head.

SCHIZAEA PUSILLA Pursh. Wet bog-barrens, Trepassey and Biscay Bay, *Fernald & Long*, nos. 26,156, 26,157, the first stations on the Avalon Peninsula. See p. 84.

OSMUNDA CLAYTONIANA L. Slopes and gulches of Bard Harbor Hill, Highlands of St. John, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, nos. 27,264, 27,265, the first stations on the West Coast north of Bay of Islands. See p. 124.

O. CINNAMOMEA L. Coniferous woods on lower southwestern slope of Bard Harbor Hill, Highlands of St. John, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 27,266, the first station on the West Coast north of Chimney Cove.

BOTRYCHIUM LUNARIA (L.) Sw. Common in turf or peat overlying limestone, western Newfoundland, and along the Straits quite to Quirpon. See p. 59. Passing to var. *ONONDAGENSE* (Underw.) Clute, which is more inclined to occur in shade but which, when occurring in the open, seems to be more sensitive than typical *B. Lunaria*. See p. 119.

B. LANCEOLATUM (S. G. Gmel.) Ångstr. Dryish meadow-slope south of Ship Cove, Sacred Bay, *Fernald, Wiegand & Long*, no. 27,273, the only definite station known to us. See p. 122. Recorded from Newfoundland, without locality, by Underwood, *Bull. Torr. Bot. Cl.* xxx. 46 (1903).

B. MATRICARIAEFOLIUM A. Br. Dryish meadow south of Ship Cove, *Fernald, Wiegand & Long*, no. 27,276 (see p. 122); very scarce

on turfy slopes and trap talus, Sacred Island, *Wiegand, Gilbert & Hotchkiss*, no. 27,274, *Fernald & Long*, no. 27,275; very scarce, turfy shore, Flower Cove, *Fernald & Long*, no. 27,277. New to Newfoundland.

EQUISETUM PRATENSE Ehrh. Mossy glades in spruce woods north of Doctor Hill, St. John Bay, *Fernald & Long*, no. 27,284, the first station east of the Gaspé Peninsula. See p. 125.

LYCOPODIUM INUNDATUM L., var. *BIGELOVII* Tuckerm. Margins of shallow pools in peaty barrens, Port aux Basques, *Fernald, Long & Dunbar*, no. 26,181; wet bog-barrens, Trepassey, *Fernald, Long & Dunbar*, no. 26,182; collected in dried-out pools in tundra, Quarry, *Fernald & Wiegand*, no. 4365. See pp. 56, 84. A coastal plain extreme heretofore not positively identified from northeast of Nova Scotia.

ISOËTES MACROSPORA Dur. Pools and rills among the gneiss hills, Port aux Basques, *Fernald, Long & Dunbar*, no. 26,196; collected in 1910 at Curling by *Fernald & Wiegand* (no. 2404). Recorded by Pfeiffer only from the Avalon Peninsula.

I. TUCKERMANI A. Br. Gravelly margins of ponds, Whitbourne, *Fernald, Long & Dunbar*, nos. 26,197, 26,198; muddy bottom of shallow pool, Cape Dégrat, Quirpon Island, *Fernald & Long*, no. 27,302; also in pond, Frenchman's Cove, Bay of Islands, *Mackenzie & Griscom*, no. 10,031. See pp. 85, 120. Records by Pfeiffer only from Quiddy Viddy Lake.

POTAMOGETON VAGINATUS Turcz. In dead water near tide-limit, East Brook, St. Barbe Bay, *Wiegand & Hotchkiss*, no. 27,327; in water over muddy limestone pavement, large pond in barrens south of Flower Cove, *Fernald & Long*, no. 27,328; new to Newfoundland. See p. 127.

P. CONFERVOIDES Reichenb. Shallow pools in peaty barrens among the gneiss hills, Port aux Basques, *Fernald, Long & Dunbar*, no. 26,225. See p. 56. Heretofore known in Newfoundland only from the central and southeastern areas.

P. HILLII Morong. In dead water over muddy limestone pavement, large pond in barrens south of Flower Cove, *Fernald & Long*, no. 27,330, the first from northeast of Vermont. See p. 127. The winter-buds, heretofore scarcely known, were splendidly developed, as large as in *P. obtusifolius* M. & K., but with characteristic bristle-tipped ligules and leaves.

P. FRIESII Rupr. Dead water near tide-limit, East Brook, St. Barbe Bay, *Wiegand & Hotchkiss*, no. 27,331, the first in Newfoundland from north of Harry's River. See p. 127.

P. OAKESIANUS Robbins. Pond-hole in boggy spots on hills, western side of Quirpon Island, *Wiegand, Gilbert & Hotchkiss*, no. 27,339, the first from north of Bonne Bay and Notre Dame Bay. See p. 120.

P. PRAELONGUS Wulfen. Deep water of large pond, Cook Point,

Pistolet Bay, *Fernald, Gilbert & Hotchkiss*, no. 27,346, the first from north of the Humber and Notre Dame Bay. Afterward collected on the Labrador side of the Straits (Trout Pond, Blanc Sablon River, *Fernald & Long*, no. 27,347).

ZANNICHELLIA PALUSTRIS L., var. *MAJOR* (Boenn.) Koch. Dead water near tide-limit, East Brook, St. Barbe Bay, *Wiegand & Hotchkiss*, no. 27,349, the first on the West Coast from north of Bay St. George. See p. 127.

GLYCERIA FERNALDII (Hitchc.) St. John. Shallow water of old beaver pond near the Yellow Marsh, back of Bard Harbor, St. John Bay, *Gilbert & Hotchkiss*, no. 27,361, the first from north of Bay of Islands.

G. FLUITANS (L.) R. Br. Along spring-rill in swale, Trepassey, *Fernald, Long & Dunbar*, no. 26,311, an extension southward from the region of St. John's; also in swales at Bay Bulls. See pp. 83, 85.

PUCCINELLIA COARCTATA Fern. & Weath. Apparently of general occurrence in northwestern Newfoundland, often occurring in limestone gravel or humus above the direct influence of sea-water. See p. 118.

In 1916 (*RHODORA*, xviii. 1, 2) Mr. Weatherby and I pointed out that the name *Puccinellia* Parlatores (1848) has precedence as a validly published generic name over *Atropis*. But since European students, to whose judgment we should ordinarily defer, notably Briquet and Schinz and Thellung¹, are maintaining *Atropis* it is perhaps advisable to reiterate the main arguments for and against it. In Ruprecht's *Flores Samoedorum Cisuralensium*² several species of *Poa* were enumerated with parenthetical sectional or subgeneric names: "*Poa* (*Phippsia*) *algida* (R. Br.)," "*Poa* (*Catabrosa*) *airoides* Koel.," "*Poa* (*Atropis*) *distans* L.," etc. and at the close of the discussion of "*Poa* (*Dupontia*) *pelligera*" occurred the following: "Observatio necessaria. *Arctophila** a *Catabrosa* (*airoide*) praesertim differt glumarum conformatione et longitudine, hac nota etiam et insuper valvulis ecostatis a *Glyceria* R. Br. recedit. *Atropis* Trin. (*P. distans*) *Catabrosae* quoad glumas proxima, spiculas habet (saltem in statu virgineo) lineares, fere teretes; in *Arctophila* nostra semper ex ovato-oblongae vel lanceolatae. E. conditione glumarum generum series fortasse sequens: *Dupontia*, *Arctophila*, *Poa*, *Atropis*, *Catabrosa*, *Phippsia*, *Coleanthus*." etc. It has been pointed out that in translating Ruprecht's Latin, Weatherby and I made an error and that the last sentence should begin, "From the condition of the

¹ Schinz & Thell. Vierteljahrss. Naturf. Gesells. Zür. lxxviii. 459-461 (1923).

² Rupr. Beitr. zur Pflanzenk. des russischen Reiches ii. 61, 64 (1845).

glumes a series of genera perhaps as follows." This, however, does not change our main contention that, since Ruprecht definitely treated all these plants as *Poa* and only by a comment at the end of the treatment half-heartedly tried to call them a series of genera, still using the initial "P." "P. *distans*" and "P. (Dupontia) *psilosantha*," the genus *Atropis* (and other genera with it) was not adequately launched. As we have already pointed out, "it is noteworthy that most authors who take up *Atropis* cite not only the Ruprecht reference but the later reference to Grisebach in Ledebour (1853)¹ as validating the genus. Grisebach, in Ledebour, certainly gave a clear generic characterization and treated the species unequivocally as species of *Atropis*, so that *Atropis* as a well published genus should date from Grisebach's treatment in 1853. In 1848, however, Parlato-re, with equal clarity and completeness had characterized *Puccinellia* as a genus to include some of the species, *P. distans* and *P. maritima*, later placed by Grisebach under *Atropis*; and it seems to us that the cause of sound nomenclature is best served by maintaining the fully and definitely published *Puccinellia* Parlato-re (1848) rather than the inadequately and uncertainly published *Atropis* Trinius in Ruprecht (1845, validated by Grisebach in 1853)." The last point is most important, Shall we gain a sound and stable nomenclature by choosing generic names which are doubtfully or only half-heartedly published instead of those which are put forward with definiteness and precision?

FESTUCA SUPINA Schur. Abundant on calcareous gravel and rock along the Straits of Belle Isle. See p. 102. Previous records from mountains to the south.

F. VIVIPARA (L.) Sm. In peat or turf, rarely on open gravel, abundant in northwestern Newfoundland. See pp. 53, 59.

It is not satisfactory to consider *F. vivipara* merely a viviparous state of *F. supina* or of *F. ovina* L., as is done in Europe. The latter is not indigenous in America, merely an introduction from Europe, but both *F. supina* and *F. vivipara* are indigenous in boreal America. If *F. vivipara* were merely a viviparous state of *F. ovina* or of *F. supina* its occasional non-viviparous panicles should be like those of the latter species. In *F. ovina* and *F. supina*, however, the lemmas are distinctly aristate; but in *F. vivipara* they are muticous. The change from a fertile to a viviparous spikelet should not also alter the lemmas from aristate to muticous.

¹ Griseb. in Ledeb. Fl. Ross. iv. 388 (1853).

F. CAPILLATA Lam. Dry gneiss crests and ridges back of Port aux Basques, *Fernald, Long & Dunbar*, no. 26,319; silicious gravelly slope, Harbour Breton, *Fernald, Long & Dunbar*, no. 26,320. Earlier collections indicate a range across the breadth of southern Newfoundland, where the plant is clearly indigenous. See pp. 50, 56.

POA ALPINA L., var. *BIVONAE* (Parl.) St. John. Dripping slaty cliffs by waterfall, John Kanes's Ladder, western face of Doctor Hill, *Fernald & Long*, no. 27,400. The only other Newfoundland collection is from Table Mt., Port-à-Port Bay.

P. ALPINA, var. *FRIGIDA* (Gaud.) Reichenb. Turfy or gravelly limestone shores, tundra or barrens, rather general along the Straits of Belle Isle and south to St. John Bay; also about Port-à-Port Bay and Bay St. George: Boat Harbor, *Fernald, Wiegand & Long*, no. 27,393; Big Brook, *Wiegand, Gilbert & Hotchkiss*, no. 27,390; Sandy (Poverty) Cove, *Pease & Griscom*, no. 27,389; Brig Bay, *Fernald, Long & Dunbar*, no. 26,293; St. John's Island, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 27,396; Table Mt., Port-à-Port Bay, *Fernald & St. John*, no. 10,784, *Mackenzie & Griscom*, no. 10,083; Green Gardens, Cape St. George, *Mackenzie & Griscom*, no. 11,041. The first American records. See pp. 79, 97.

P. ALPINA, var. *BREVIFOLIA* Gaud. Dry limestone barrens, from Straits of Belle Isle south of St. John Bay: Burnt Cape, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 27,391; Boat Harbor, *Fernald, Wiegand & Long*, no. 27,392; Savage Cove, *Fernald, Pease & Long*, no. 27,394; St. John's Island, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 27,397. The first records from America. See p. 102.

POA LAXA Haenke. Damp quartzite cliffs along upper Deer Pond Brook, Highlands of St. John, *Fernald & Long*, no. 27,405, the first collection from Newfoundland. See p. 124.

CATABROSA AQUATICA (L.) Beauv. Abundant along the Straits and probably the length of the West Coast. Tremendously variable; in rich swales and sloughs with panicles more than 1 dm. long, in drier habitats with them reduced to 2 cm.

HORDEUM BOREALE Scribn. & Sm. Turfy or gravelly slopes, swales, and strands, abundant at the eastern end of the Straits of Belle Isle: Little Quirpon, *Fernald & Gilbert*, no. 27,440; Mauve Bay, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 27,442; Ship Cove, *Fernald, Wiegand & Long*, no. 27,441. See p. 121. Our only previous record was from Port Saunders. A species of the north Pacific slope of America known in the East only from northern Newfoundland and adjacent Labrador.

TRisetum MELICOIDES (Michx.) Vasey. By brook in boggy thicket southeast of Flower Cove, *Wiegand, Gilbert & Hotchkiss*, no. 27,456, the first Newfoundland station outside the Exploits valley.

DESCHAMPSIA CESPITOSA (L.) Beauv. This polymorphous circumpolar species is represented in eastern America by four clearly

defined varieties, three of which occur in Newfoundland. Their diagnostic characters are indicated below.

- a. Culms 0.65–1.7 m. high, 2–6 mm. in diameter at base: leaves elongate, flat or only tardily involute; the basal mostly 1.5–6 dm. long, with ligules 5–12 mm. long; the lower cauline with blades 1.5–4 dm. long: panicle 1.5–4.5 dm. long, diffuse *b*.
- b. Spikelets 3.5–5.5 mm. long.....Var. *genuina*.
- b. Spikelets 2–3 mm. long.....Var. *parviflora*.
- a. Culms 0.7–7.5 dm. high, 1–2.5 mm. in diameter at base: leaves flat or involute; the basal mostly 0.3–3 dm. long, with ligules 2–7 mm. long; the lower cauline with blades 0.1–1.8 dm. long: panicle 0.2–2.2 dm. long *c*.
- c. Spikelets 3–4.5 mm. long: panicle lax, rather diffuse during anthesis.....Var. *glauca*.
- c. Spikelets 4.5–7 mm. long: panicle commonly contracted, occasionally diffuse, during anthesis.....Var. *littoralis*.

Var. *GENUINA* Gren. & Godr. Fl. de France, iii. 507 (1855). *Aira cespitosa* L. Sp. Pl. i. 64. (1753). *A. altissima* Moench, Meth. 182 (1794). *D. cespitosa* (L.) Beauv. Agrost. 91, 160, expl. Pl. xviii. (1812). *A. cespitosa*, ϵ . *firmula* Wimm. & Grab. Fl. Sil. i. 60 (1827). *A. cespitosa genuina* Reichenb. Ic. Fl. Germ. i. t. XCVI. fig. 1682 (1834). *A. cespitosa* b) *altissima* (Moench) Aschers. Fl. Brand. i. 833 (1864).—Newfoundland; Montana to southern British Columbia, south to Colorado, Nevada and California; Eurasia. The following are characteristic. NEWFOUNDLAND: sandy and gravelly banks, Whitbourne, *Fernald & Wiegand*, no. 4599; upper border of gravelly margin of Junction Pond, Whitbourne, *Fernald & Long*, no. 26,282; gravelly thickets along Harry's River, *Fernald & Wiegand*, no. 2589. MONTANA: Bozeman, *Rydberg*, no. 2219; wet meadow, Sheep Creek, *Rydberg*, no. 3301. WYOMING: Laramie, *Merrill*, no. 25. COLORADO: slopes, Mt. Carbon, *Tidestrom*, no. 3725. IDAHO: Forks of St. Mary's River, *Leiberg*, no. 1118; canyon at head of South Fork of the Humboldt, *Heller*; no. 9727. CALIFORNIA: Prattville, *Heller & Kennedy*, no. 8790; Mt. Eddy, *Copeland*, no. 3798. OREGON: wet soil in shade of *Coniferae*, Big Meadows, Des Chutes River, *Leiberg*, no. 523; Camas Prairie, *Griffith & Hunter*, no. 76; ditch, Salem, *Nelson*, no. 1354. BRITISH COLUMBIA: summit of Selkirk Mts., *J. Macoun*; Chilliwack Valley, *J. M. Macoun*, no. 26,084.

Var. *PARVIFLORA* (Thuill.) Richter, Pl. Eu. i. 56 (1890). *Aira parviflora* Thuill. Fl. Par. ed. 2, i. 38 (1799). ? *A. cespitosa* β . *virescens* Wimm. & Grab. Fl. Sil. i. 60 (1827).—Locally in New England where introduced from Europe. MAINE: damp hollow, woods and thickets along shore, Islesboro, *Woodward, Bissell & Fernald*, no. 8743. MASSACHUSETTS: edge of field, Washington, July 17, 1919, *Hoffmann*. CONNECTICUT: open swamp, very abundant, Franklin, July 8, 1906, *Woodward*; introduced in grassland, Southington, June 21, 1903, *Bissell*; spreading in partly shaded dooryard, South Windsor, *Weatherby*, no. 4945.

Var. GLAUCA (Hartm.) Lindm. fil. Svensk Fanerogamfl. 81 (1918). *Aira ambigua* Michx. Fl. Bor.-Am. i. 61 (1803). *D. glauca* Hartm. Handb. Skand. Fl. 448 (1820). *A. aristulata* Torr. Fl. N. Mid. U. S. i. 132 (1824). *A. cespitosa* β . *glauca* Hartm. l. c. ed. 2: 25 (1832). *A. cespitosa*, var. *minor* Lange, Fl. Dan. xvii. fasc. l. 4, t. MMDCCCC-XLV, fig. 1 (1880).—River-banks, lake-shores and damp, chiefly calcareous, soil, Newfoundland to Yukon, south to northern New Jersey, Pennsylvania, Ohio, Illinois, Arizona, and California; Faroe Islands and Scandinavia. The following, selected from a large series of specimens, are representative. NEWFOUNDLAND: Rock Marsh, Flower Cove, *Fernald, Long & Dunbar*, no. 26,279. QUEBEC: "circa lacus *Mistassins* et juxta amnes in lacum *S. Joannis* defluentes," *Michaux* (type of *Aira ambigua* in herb. Mus. d'Hist. Nat. Paris), "Ab *AIRA cespitosa* foliis tantum differt etiamque dimidio minor est"; Ile-aux-Couleuvres, Lac St-Jean, *Victorin*, no. 15,258; Bonaventure River, August, 1904, *Collins, Fernald & Pease*; St. Lawrence River below Quebec, July 9, 1905, *Churchill*. NEW BRUNSWICK: Woodstock, *Fernald & Long*, no. 12,658; Westfield, *Fassett*, no. 2183. NOVA SCOTIA: Shubenacadie Grand Lake, *Fernald, Bartram & Long*, no. 23,285; Cedar Lake, *Fernald, Bissell, Pease, Long & Linder*, no. 19,946; Yarmouth, *Bissell & Pease*, no. 19,944. MAINE: Fort Fairfield, *Fernald*, no. 183; Milford, *Fernald*, no. 12,655; Winn, *Fernald & Long*, no. 12,657; Pembroke, *Fernald*, no. 1310; West Dresden, *Fassett*, no. 1045. NEW HAMPSHIRE: Lake Umbagog, Errol, *Pease*, no. 10,515; Dalton, *Pease*, no. 17,387; Summer's Falls, June 12, 1897, *Williams*. VERMONT: Lyndon, June, 1871, *Congdon*; Burlington, June 18, 1877, *Pringle*; Brattleboro, July 8, 1895, *Grout*. MASSACHUSETTS: Merrimack R., Lowell, July 20, 1882, *Swan*. CONNECTICUT: Connecticut R., East Haddam, *Weatherby*, no. 4295. NEW YORK: Spencer Lake, Spencer, *Metcalf*, no. 5698; Cortland, *Wiegand*, no. 3526; Bergen, *House*, no. 6521. NEW JERSEY: White Pond, Sussex Co., *Mackenzie*, no. 4648. PENNSYLVANIA: Pleasant Grove, *Heller*, no. 4819. ONTARIO: Belleville, *Macoun*, no. 2239; Wingham, June 17, 1892, *Morton*. MICHIGAN: Isle Royale, *Cooper*, no. 164. WISCONSIN: Jackson Harbor, June 21, 1896, *Schuette*. MINNESOTA: Thompson, Carlton Co., *Sandberg*, no. 395. MANITOBA: Lake Winnipeg Valley, 1857, *Bourgeau*. SASKATCHEWAN: Moose Jaw, *Macoun*, no. 13,080. ALBERTA: Red Deer Valley near Rosedale, *Moodie*, no. 1042; near Banff, July 4, 1891, *Macoun*. MONTANA: Forks of the Madison, *Rydberg & Bessey*, no. 3588. IDAHO: Victor, *Merrill & Wilcox*, no. 185. WYOMING: Laramie River, Albany Co., *Nelson*, no. 430; Washington Ranch, *Merrill & Wilcox*, no. 78. COLORADO: Gunnison, *Baker*, nos. 530, 553; Trout Creek Pass, July 18, 1873, *Coulter*; Hahn's Pass, *Goodding*, no. 1692; Hamor's Lake, *Baker, Earle & Tracy*, no. 982. ARIZONA: Willow Spring, *Rothrock*, no. 230, *Palmer*, no. 566. NEVADA: Jarbridge, *Nelson & Macbride*, no. 2005. CALIFORNIA: Big Trees, Calaveras Co., *Hillebrand*, no. 2246; near

Donner Lake, *Torrey*, no. 558. OREGON: Wallowa Mts., *Cusick*, no. 3126; Lower Albina, Portland, *Sheldon*, no. 11,125. WASHINGTON: Calispel Valley, *Kreager*, no. 328. YUKON: Carcross, *Eastwood*, no. 697e.

The identity of our plant with the Scandinavian var. *glauca* is definitely indicated by beautiful material collected in Torne Lapmark by Professor Alm. This is clearly matched by many American specimens, especially such small plants as *Fernald, Long & Dunbar*, no. 26,279 from Newfoundland; *Fernald & Collins* material from Gaspé Co., Quebec; *Eggleston*, no. 1 from Summer's Falls, New Hampshire; *Sandberg*, no. 395 from Minnesota; *Tweedy*, no. 616 from Yellowstone Park;

Var. LITTORALIS (Reut.) Richter, Pl. Eu. i. 56 (1890). *Aira cespitosa*, var. β . *littoralis* Reuter, Cat. Pl. Vasc. Genève. 116 (1832). *A. littoralis* (Reut.) Godet, Fl. Jura, 803 (1852). *D. cespitosa*, var. *alpina* Vasey in Beal, Grasses N. A. ii. 368 (1896). *D. alpicola* Rydb. Bull. Torr. Bot. Cl. xxxii. 601 (1905). *A. alpicola* Rydb. Fl. Rocky Mts. ed. 2, 1112 (1923).—Southern Labrador, western Newfoundland and eastern Quebec; Alaska to the alpine regions of Colorado, Utah and California; Eurasia. LABRADOR: wet sands and peats, Forteau, *Long*, no. 27,461; brackish shore, Blanc Sablon, *Fernald & Wiegand*, nos. 2583, 2586 (distrib. as var. *Wibeliana* (Sonder) Ledeb.). NEWFOUNDLAND: exsiccated peaty depressions in limestone barrens, Cape Norman, *Wiegand & Long*, no. 27,460; springy swale, Flower Cove, *Fernald, Long & Dunbar*, no. 26,281; serpentine tablelands, Bonne Bay, *Fernald & Wiegand*, no. 2588, *Kimball*, no. 126; serpentine barrens, Blomidan Mts., *Fernald & Wiegand*, no. 2585; river-bank, Coal River, *Waghorne*, no. 16 (as *D. bottnica* Wahlenb.); limestone tableland, Table Mt., Port-à-Port Bay, *Fernald & Wiegand*, no. 2584, *Fernald & St. John*, nos. 10,781–10,783; gravelly beach, St. George's Pond, *Fernald & Wiegand*, no. 2587; lakeside, Grand Lake, *Waghorne*, no. 18. QUEBEC: mossy serpentine barrens, alt. 1000–1100 m., and alpine brooks and pools, Mt. Albert, *Collins & Fernald*, nos. 24, 24a, *Victorin et al*, no. 17,786; Ste. Anne de Beaupré, *Macoun*, no. 69,230. ALBERTA: mountains north of Cavell Creek, *J. M. Macoun*, no. 98,349; south of Wilcox Pass, *Brown*, no. 1394; Lake Louise, *Brown*, no. 549. IDAHO: Soda Springs, *Mulford*, no. 53. WYOMING: many specimens from the mountains, at 2400–3600 m. COLORADO: many specimens from the mountains at 2600–3965 m. UTAH: Dyer Mine, Uintah Mts., *Gooding*, no. 1299. CALIFORNIA: Tuolumne Meadows, *Smiley*, no. 750; Lake of the Woods Meadow, Tahoe, *Smiley*, no. 65. ALASKA: Unalaska, *Harrington*; Attu Island, *J. M. Macoun*, no. 269.

(To be continued.)